

1 Amendments to the Claims

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3 1. (Currently Amended) A computerized method comprising:  
4 identifying, from a plurality of objects, a set of core objects for a data  
5 structure corresponding to a community of objects by identifying one or more  
6 objects that are referenced by at least a threshold number of other objects of the  
7 plurality of objects; and  
8 expanding, based on the set of core objects, the data structure  
9 corresponding to the community of objects to include a set of affiliated objects,  
10 wherein the set of core objects and the set of affiliated objects are maintained as  
11 distinct entities within the data structure; and  
12 accessing at least one element of the data structure with a processor of a  
13 computer.  
14

15 2. (Original) A method as recited in claim 1, further comprising:  
16 repeating the identifying and expanding for a plurality of communities of  
17 objects, wherein the objects in each community of objects are all from the plurality  
18 of objects.  
19

20 3. (Original) A method as recited in claim 2, further comprising:  
21 merging together a first community of the plurality of communities and a  
22 second community of the plurality of communities if there is sufficient similarity  
23 between the core objects in the first community and the core objects in the second  
24 community, wherein the merging results in a merged community including all of  
25 the objects of the first community and the second community and having a set of

1 core objects that includes the core objects in the first community and the core  
2 objects in the second community.

3  
4 4. (Original) A method as recited in claim 2, further comprising:  
5 merging together a first community of the plurality of communities and a  
6 second community of the plurality of communities if there is sufficient similarity  
7 between the core and affiliated objects in the first community and the core and  
8 affiliated objects in the second community.

9  
10 5. (Original) A method as recited in claim 2, further comprising:  
11 identifying a first community of the plurality of communities and a second  
12 community of the plurality of communities;  
13 determining whether the first community and second community satisfy  
14 one or more constraints; and  
15 merging the first community and the second community if the one or more  
16 constraints are satisfied, wherein the merging results in a merged community  
17 including all of the objects of the first community and the second community.

18  
19 6. (Original) A method as recited in claim 2, wherein one of the  
20 plurality of objects is one of the set of core objects for the community of objects,  
21 and is one of the set of affiliated objects for another community of objects.

22  
23 7. (Original) A method as recited in claim 2, wherein one of the  
24 plurality of objects is one of the set of core objects for multiple communities.  
25

1           8.     (Original)     A method as recited in claim 2, wherein one of the  
2 plurality of objects is one of the set of affiliated objects for multiple communities.

3  
4           9.     (Previously Presented)     A method as recited in claim 1, wherein  
5 identifying the set of core objects comprises:

6                 identifying links between objects of the plurality of objects;  
7                 finding groups of objects of the plurality of objects that satisfy a link  
8 threshold; and  
9                 identifying, as a core set, one or more of the groups of objects that satisfy  
10 the link threshold.

11  
12          10.    (Canceled)

13  
14          11.    (Previously Presented)     A method as recited in claim 1, wherein  
15 expanding the data structure corresponding to the community of objects  
16 comprises:

17                 identifying links between objects of the plurality of objects;  
18                 identifying one or more objects of the plurality of objects, wherein a link  
19 exists from each of the identified one or more objects to at least one of the core  
20 objects of the set of core objects; and

21                 including, in the set of affiliated objects, each of the identified one or more  
22 objects.

23  
24          12.    (Currently Amended)     A method as recited in claim 11, further  
25 comprising:

1 assigning the set of core objects to a center portion of a  
2 ~~graphics-independent user interface independent~~ model;  
3 ranking each affiliated object in the set of affiliated objects; and  
4 assigning each affiliated object in the set of affiliated objects to a particular  
5 concentric portion around the center of the model in accordance with the rank of  
6 the affiliated object.

7  
8 13. (Original) A method as recited in claim 11, further comprising:  
9 ranking each affiliated object in the set of affiliated objects in accordance  
10 with the number of links from the affiliated object to core objects of the set of core  
11 objects, wherein affiliated objects having a larger number of links to core objects  
12 have higher rankings.

13  
14 14. (Original) A method as recited in claim 1, wherein each of the  
15 plurality of objects comprises a document.

16  
17 15. (Original) A method as recited in claim 14, further comprising:  
18 identifying a plurality of links, wherein each link links one object to  
19 another object, and wherein each of the plurality of links represents a citation in  
20 one document to another document.

21  
22 16. (Original) A method as recited in claim 1, wherein each of the  
23 plurality of objects comprises a person.

24  
25 17. (Original) A method as recited in claim 16, further comprising:

1 identifying a plurality of links, wherein each link links one object to  
2 another object, and wherein each of the plurality of links represents a relationship  
3 of one person to another person.

4  
5 18. (Original) A method as recited in claim 1, wherein each of the  
6 plurality of objects comprises a web page.

7  
8 19. (Original) A method as recited in claim 18, further comprising:  
9 identifying a plurality of links, wherein each link links one object to  
10 another object, and wherein each of the plurality of links represents a hyperlink in  
11 one web page to another web page.

12  
13 20. (Currently Amended) One or more tangible computer readable  
14 media having stored thereon a plurality of instructions that, when executed by one  
15 or more processors of a device, causes the one or more processors to, at least:

16 identify, from a plurality of objects, a first collection of objects to be core  
17 objects of a community by identifying one or more objects that are referenced by  
18 at least a threshold number of other objects of the plurality of objects;

19 identify, from the plurality of objects, a second collection of objects that are  
20 linked to the first collection of objects to be affiliate objects of the community;

21 add, to a data structure corresponding to the community, the first collection  
22 of objects; and

23 add, to the data structure corresponding to the community, the second  
24 collection of objects;  
25

1        wherein the first collection of objects and the second collection of objects  
2        are maintained as distinct entities within the data structure.

3  
4        21.     (Canceled)

5  
6        22.     (Previously Presented)     One or more computer readable media as  
7        recited in claim 20, wherein the plurality of instructions, when executed by the one  
8        or more processors, further cause the one or more processors to, at least:

9                identify, from the plurality of objects, additional first collections of objects  
10              to be core objects of additional communities;

11              identify, from the plurality of objects, additional second collections of  
12              objects that are linked to the first collections of objects to be affiliated objects of  
13              the additional communities;

14              add, to data structures corresponding to the additional communities,  
15              respective additional first collections of objects; and

16              add, to the data structures corresponding to the additional communities, the  
17              respective additional second collections of objects.

18  
19        23.     (Original)     One or more computer readable media as recited in  
20        claim 22, wherein the plurality of instructions, when executed by the one or more  
21        processors, further cause the one or more processors to:

22              merge together a first of the communities and a second of the communities  
23              if there is sufficient similarity between the core objects in the first of the  
24              communities and the core objects in the second of the communities, wherein the  
25              merge results in a merged community including all of the objects of the first of the

1 communities and the second of the communities and having a set of core objects  
2 that includes the core objects in the first of the communities and the core objects in  
3 the second of the communities.

4  
5 24. (Original) One or more computer readable media as recited in  
6 claim 22, wherein the plurality of instructions, when executed by the one or more  
7 processors, further cause the one or more processors to:

8 merge together a first of the communities and a second of the communities  
9 if there is sufficient similarity between the core and affiliated objects in the first of  
10 the communities and the core and affiliated objects in the second of the  
11 communities.

12  
13 25. (Canceled)

14  
15 26. (Original) One or more computer readable media as recited in  
16 claim 22, wherein the link threshold comprises a minimum number of objects in  
17 the plurality of objects that must each link to each object in the group.

18  
19 27. (Canceled)

20  
21 28. (Currently Amended) One or more computer readable media as  
22 recited in claim 20, wherein the plurality of instructions, when executed by the one  
23 or more processors, further cause the one or more processors to, at least:

24 assign the first collection of objects to a center portion of a  
25 ~~graphics-independent~~ user interface independent model;

1 rank each object of the second collection of objects; and  
2 assign each object of the second collection of objects to a particular  
3 concentric portion around the center of the model in accordance with the rank of  
4 the object.

5  
6 29. (Currently Amended) A system to mine communities from a  
7 plurality of objects, the system comprising:

8 a processor; and  
9 a memory coupled to the processor, wherein the memory includes one or  
10 more instructions that cause the processor to, at least:

11 identify, from the plurality of objects, one or more core object sets  
12 from the plurality of objects by identifying one or more objects that are  
13 referenced by at least a threshold number of other objects of the plurality of  
14 objects, wherein each core object set is incorporated into a respective data  
15 structure defining a community; and

16 for each of the core object sets, expand the respective data structure  
17 defining the community to include a set of affiliated objects, wherein the  
18 expansion is based on the core object set of the community, and the core  
19 object set and the associated set of affiliated objects are maintained as  
20 distinct entities within each respective data structure.

21  
22 30. (Original) A system as recited in claim 29, wherein the one or  
23 more instructions further cause the processor to:



1 repeat the identification and expansion for a plurality of communities of  
2 objects, wherein the objects in each community of objects are all from the plurality  
3 of objects.

4  
5 31. (Original) A system as recited in claim 29, wherein the one or  
6 more instructions that cause the processor to identify the one or more core object  
7 sets comprises one or more instructions that cause the processor to:

8 identify links between objects of the plurality of objects;  
9 find groups of objects of the plurality of objects that satisfy a link  
10 threshold; and  
11 identify, as a core object set, one or more of the groups of objects that  
12 satisfy the link threshold.

13  
14 32. (Canceled)

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16 33. (Currently Amended) A system implemented at least in part in  
17 a computing device, the system comprising:

18 a processor;

19 a core set identification module to identify core sets of objects for data  
20 structures corresponding to communities from a plurality of objects by identifying  
21 one or more objects that are referenced by at least a threshold number of other  
22 objects of the plurality of objects; and

23 a community expansion module to expand the data structures  
24 corresponding to the communities by adding sets of affiliated objects to data  
25 structures corresponding to the communities, wherein the expansion is based at

1 least in part on at least one core set of objects, and each core set of objects and  
2 each set of affiliated objects is maintained as a distinct entity within respective  
3 data structures corresponding to communities.

4  
5 34. (Original) A system as recited in claim 33, wherein the core set  
6 identification module is further to:

7 identify links between objects of the plurality of objects;

8 find groups of objects of the plurality of objects that satisfy a link  
9 threshold; and

10 identify, as a core object set, one or more of the groups of objects that  
11 satisfy the link threshold.

12  
13 35. (Original) A system as recited in claim 33, wherein the  
14 community expansion module is further to:

15 identify links between objects of the plurality of objects; and

16 for each community,

17 identify one or more objects of the plurality of objects, wherein a  
18 link exists from each of the identified one or more objects to at least one of  
19 the objects of the core object set of the community, and

20 include, in the set of affiliated objects of the community, each of the  
21 identified one or more objects.

22  
23 36. (Original) A system as recited in claim 33, further comprising:

24 a core set merging module to merge together a first of the communities and  
25 a second of the communities if there is sufficient similarity between the core

1 objects in the first of the communities and the core objects in the second of the  
2 communities, wherein the core set merging module generates a merged  
3 community that includes all of the objects of the first of the communities and the  
4 second of the communities and has a set of core objects that includes the core  
5 objects from the first of the communities and the core objects from the second of  
6 the communities.

7  
8 37. (Original) A system as recited in claim 33, further comprising:  
9 a community merging module to merge together a first of the communities  
10 and a second of the communities if there is sufficient similarity between the core  
11 and affiliated objects of the first of the communities and the core and affiliated  
12 objects of the second of the communities.

13  
14 38. (Currently Amended) A computerized method comprising:  
15 grouping a first collection of a plurality of objects into a center portion;  
16 grouping a second collection of the plurality of objects into a plurality of  
17 concentric portions around the center portion so that all objects of the second  
18 collection that are grouped in a particular one of the concentric portions have a  
19 same rank; and  
20 instantiating, in at least one tangible computer readable media, a  
21 community of objects corresponding to a ~~graphics-independent~~ user interface  
22 ~~independent~~ model comprising the groupings of the first and second collections of  
23 the objects.  
24  
25

1           39. (Previously Presented) A method as recited in claim 38, wherein  
2 both the center portion and the plurality of concentric portions collectively are a  
3 set of concentric circles.

4  
5           40. (Original) A method as recited in claim 38, wherein the center  
6 portion comprises a circle.

7  
8           41. (Previously Presented) A method as recited in claim 38, wherein  
9 the each of the plurality of concentric portions comprises a circle.

10  
11           42. (Original) A method as recited in claim 38, wherein the first  
12 collection of the objects comprises a core set of objects.

13  
14           43. (Original) A method as recited in claim 38, wherein each object  
15 of the second collection of the objects comprises an affiliated object.

16  
17           44. (Currently Amended) One or more tangible computer readable  
18 media having stored thereon a plurality of instructions that, when executed by one  
19 or more processors of a device, causes the one or more processors to describe a  
20 community of objects by, at least:

21           creating a set of concentric data circles;  
22           assigning a group of core objects of the community to the center data circle  
23 of the set of concentric data circles; and  
24           assigning a group of affiliated objects of the community to a plurality of  
25 data circles of the set of concentric data circles, ~~wherein the plurality of data~~

1 circles surround the center data circle, and wherein all of the objects of the group  
2 of affiliated objects having a same rank are assigned to a same one of the set of  
3 concentric data circles, and wherein the set of concentric data circles facilitates  
4 traversal of the community of objects independent of a user interface.

5  
6 45. (Currently Amended) The computerized method of claim 1,  
7 wherein each at least one reference is associated with a weight corresponding to a  
8 reference type of the at least one reference that is independent of reference  
9 frequency.

10  
11 46. (Previously Presented) The computerized method of claim 45,  
12 wherein:

13 each weight corresponds to a numeric value; and

14 the threshold number is a function of, at least, the numeric value  
15 corresponding to the weight associated with at least one reference.

16  
17 47. (Previously Presented) The computerized method of claim 45,  
18 wherein:

19 each weight corresponds to a numeric value; and

20 each object in the community is ranked as a function of, at least, the  
21 numeric value corresponding to the weight associated with at least one reference  
22 to the object.

23  
24 48. (Previously Presented) The computerized method of claim 45,  
25 wherein the data structure corresponding to the community of objects comprises:

1 the set of core objects;  
2 the set of affiliated objects; and  
3 a programmatic function for measuring a degree of affiliation between two  
4 objects of the community based on, at least, the weight associated with at least one  
5 reference in a reference chain between the two objects.

6  
7 49. (Previously Presented) The computerized method of claim 29,  
8 wherein:

9 at least two core object sets are identified from the plurality of objects; and  
10 a decision to merge the at least two core object sets is based on a set of  
11 conditions comprising a condition specifying that a ratio of a minimum size of one  
12 of the at least two core object sets to a size of an intersection of the at least two  
13 core object sets is less than 2.  
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